

# Guided Worksheet: *Periodic Trends*

1. As you go through the periodic table left to right and top to bottom, you can see that the elements are arranged in numerical order. What is the name of the number that they are arranged by?

Atomic Number

2. In the periodic chart, there is also a pattern involving the atomic masses.

a) IN GENERAL, what happens to the atomic mass of atoms as you move from left to right and top to bottom in the periodic chart?

The atomic mass INCREASES.

b) There are at least three exceptions to this general rule. Identify at least one pair of atoms which break this general rule.

Co & Ni, Te & I, Th & Pa

3. Recently we talked about the "most probable charge" that an atom will take when it becomes an ion.

a) List all the families that are likely to take POSITIVE charges?

1 - 13

b) List all the families that are likely to take NEGATIVE charges?

15 - 17

c) Look at the families you have listed above and create a general rule that will help you, just by looking at the periodic table, to identify the charge an ion will take.

Metals generally take a positive charge.

Nonmetals take a negative charge.

d) Are there any exceptions to the rule you just made? (There should be!) Identify the exception...

4. As you move along the periodic chart, every time a proton is added to form a new atom an electron is also added.

a) If you pick a family of atoms and move down the periodic chart from Period 1 to Period 7, what is happening to the atoms' valence electrons?

Valence electrons remain constant.

b) What is happening to the atom's radius (or size) as you move down the family from Period 1 to Period 7? Explain how you know.

Radius is increasing.

The number of energy levels is also increasing.

c) As you move from left to right across a single period (from the alkali metals to the noble gases) atoms keep getting more electrons and more protons, but they also keep getting smaller. Suggest a reason why atoms would get more charges and decrease in size.

It is just like static electricity... The more charge you get on you the more your clothes cling to you. In this case, the more charges that are involved, the harder they pull on each other and the smaller the atom gets. Until an additional energy level is added...